

Amendments to the Claims

1. (Currently amended) A method for making a hypermutable bacterium comprising the steps of:

introducing into a bacterium a polynucleotide encoding a dominant negative ~~PMS2~~ PMS2-134 mismatch repair protein under the control of an inducible transcription regulatory sequence; and

inducing said inducible transcription regulatory sequence in said bacterium; ~~wherein said polynucleotide comprises a truncation mutation, wherein said dominant negative PMS2 mismatch repair protein is a truncated protein, and wherein said dominant negative PMS2 mismatch repair protein exerts a dominant negative effect on mismatch repair when expressed in said bacterium,~~ whereby said bacterium becomes hypermutable.

2-5. (Canceled)

6. (Currently amended) The method of claim 1 wherein the dominant negative ~~PMS2~~ PMS2-134 mismatch repair protein is a dominant negative human ~~PMS2~~ PMS2-134 protein.

7. (Currently amended) The method of claim 1 wherein the dominant negative ~~PMS2~~ PMS2-134 mismatch repair protein is a dominant negative plant ~~PMS2~~ PMS2-134 protein.

8-15. (Canceled)

16. (Currently amended) The method of claim 7 wherein said polynucleotide encoding a dominant negative ~~PMS2~~ PMS2-134 mismatch repair protein comprises a truncation mutation at codon 134.

17. (Currently amended) The method of claim 6 wherein said polynucleotide encoding a dominant negative ~~PMS2~~ PMS2-134 mismatch repair protein comprises a truncation mutation at codon 134.

18. (Currently amended) A homogeneous composition of induced, cultured, hypermutable bacteria which comprise a polynucleotide encoding a dominant negative mismatch repair

protein under the control of an inducible transcription regulatory sequence, ~~wherein said polynucleotide comprises a truncation mutation, and~~ wherein said dominant negative mismatch repair protein is PMS2-134 ~~a truncated dominant negative PMS2 mismatch repair protein~~, wherein said ~~truncated~~ dominant negative PMS2 PMS2-134 mismatch repair protein exerts a dominant negative effect when expressed in said bacteria.

19-25. (Canceled)

26. (Previously presented) The homogeneous composition of claim 18 wherein the bacteria express a protein which consists of the first 133 amino acids of PMS2.

27. (Currently amended) The homogeneous composition of claim 26 wherein the dominant negative PMS2 PMS2-134 mismatch repair protein is a dominant negative human PMS2 PMS2-134 mismatch repair protein.

28-70. (Canceled)

71. (Currently amended) The method of claim 1 wherein the polynucleotide encoding a dominant negative PMS2 PMS2-134 mismatch repair protein comprises a truncation mutation at codon 134.

72. (Currently amended) A method for making a hypermutable bacterium comprising the steps of:

introducing into a bacterium a polynucleotide encoding a dominant negative mismatch repair protein under the control of an inducible transcription regulatory sequence, wherein said dominant negative mismatch repair protein is ~~selected from the group consisting of a dominant negative PMSR3 PMSR and a dominant negative PMS2L mismatch repair protein~~; and

inducing said bacterium;  
wherein said dominant negative PMSR3 mismatch repair protein exerts a dominant negative effect on mismatch repair when expressed in said bacterium, whereby said bacterium becomes hypermutable.

73. (Currently amended) A homogeneous composition of induced, cultured, hypermutable bacteria which comprise a polynucleotide encoding a ~~dominant negative mismatch repair protein selected from the group consisting of a dominant negative PMSR3 PMSR and a dominant negative PMS2L~~ mismatch repair protein under the control of an inducible transcription regulatory sequence, wherein said dominant negative PMSR3 mismatch repair protein exerts a dominant negative effect when expressed in said bacteria.

74. (Currently amended) The composition of claim 26 wherein the ~~PMS2~~ PMS2-134 mismatch repair protein is a plant ~~PMS2~~ PMS2-134 mismatch repair protein.

75. (Currently amended) The composition of 74 wherein the plant ~~PMS2~~ PMS2-134 mismatch repair protein is an *Arabidopsis thaliana* ~~PMS2~~ PMS2-134 mismatch repair protein.

76. (Currently amended) The method of claim 7 wherein the dominant negative ~~PMS2~~ PMS2-134 protein is an *Arabidopsis thaliana* ~~PMS2~~ PMS2-134 protein.

77. (Currently amended) The method of claim 16 wherein the dominant negative ~~PMS2~~ PMS2-134 protein is an *Arabidopsis thaliana* ~~PMS2~~ PMS2-134 protein.

78. (Currently amended) The homogeneous composition of claim 26 wherein the dominant negative ~~PMS2~~ PMS2-134 mismatch repair protein is a dominant negative *Arabidopsis thaliana* ~~PMS2~~ PMS2-134 mismatch repair protein.